REMARKS/ARGUMENTS

Claims 13-22 are pending. Claims 1-12 have been canceled without prejudice and without disclaimer. New claims 13-22 have been added. No new matter has been introduced.

Claims 13-20

Applicants respectfully submit that new independent claim 13 is novel and patentable over Terrell et al. (US 2003/0189936A1) and Moshfeghi et al. (US 6,779,119) because, for instance, they do not teach or suggest that when the switch receives the first read request, if the second storage device has second data that is copy data of the first data, the switch converts the first read request into a second read request for the second data, and transmits the second read request to the second storage device via the network; whereas if the second storage device does not have the second data, the switch transmits the first read request to the first storage device via the network; wherein when receiving the data, the switch transfers the received data to the computer as the first data from the first storage device.

The present invention as claimed discloses a computer that issues a first read request for first data, a switch coupled to the computer via a network, a first storage device coupled to the switch via the network and storing the first data, and a second storage device coupled to the switch via the network and being able to store second data that is copy data of the first data. The switch determines which storage device to fetch the requested data in response to the first read request.

If the second storage device has the second data, the switch converts the first read request into a second read request for the second data, and transmits the second read request to the second storage device via the network. The converting operation which the switch performs involves a conversion of network address, and in many cases involves a conversion of the address of the storage area at which the first data is located. If the second storage does not have the second data, the switch transmits the first read request to the first storage device via the network, with the request unchanged.

In the claimed invention, the switch performs the conversion of the first read request when the second storage device has the copy data of the first data stored in the first storage device, while the switch does not perform the conversion when the second storage device does not have the copy data.

In contrast, Terrell et al. discloses a router which has a managing processor, a supervising processor, and a plurality of routing processors. See Abstract, Fig. 2, and paragraph [0084]. Terrell's routing processor translates a virtual resource identifier included in a frame into a nonvirtual resource identifier to direct the frame to the nonvirtual resource through the port and network. See paragraph [0161], Fig. 7 (714), and paragraph [0010].

Terrell's storage virtualization technique is nothing more than a conventional virtual-to-real address translation, although the real storages are widely distributed over the network. The technique has **nothing** to do with a technique for accessing to copy data which the present invention features.

Moreover, Terrell's managing processor executes a cache agent process (Fig. 4), as the Examiner has pointed out. In response to a request for data, the cache agent process obtains the data from a faster access cache if the data is in the cache instead of obtaining the data from a slower access memory. See paragraph [0118]. Terrell's cache is contained in the router (see Fig. 4); it is **not** equivalent to the second storage device in the claimed invention because no communication through a network for its own is caused by accessing the cache. Further, it is clear that a read request does not go through a virtual-to-real address translation by the storage virtualization facility, when the managing processor has found the requested data in the cache, because the read request does not need a further routing process. That is, Terrell et al. does **not** convert the read request into another when a router has found a copy of the requested data in its local storage.

Terrell's managing processor has a mirror agent process to be executed, in addition (Fig. 4), as the Examiner has pointed out. The mirror agent process maintains more than one copy of particular data. See paragraph [0119]. A second copy of data (also called the mirror) must hold the same contents as the primary copy of data when accessing the second copy. The mirror allows the user to obtain data from the second copy instead of from

the primary copy. Terrell's mirror function is applied only to the cache (see paragraph [0119] (last 7 lines) and Fig. 4), suggesting **nothing** beyond the cache.

In addition, Terrell et al. does **not** disclose a switch where the switch beforehand transfers data stored in the first storage device to the second storage device, as the Examiner has mentioned.

Moshfeghi et al. discloses a system which prefetches information to hold it in a cache in anticipation of the user's request for reducing actual response time. See Abstract; and column 4, lines 38-56. The prefetcher 120 issues one or more anticipated commands through the task processor before the user submits a request corresponding to the command. The task processor obtains a response from the server via a network and the prefetcher 120 stores the response in a cache memory to prepare for the user's request.

Both Terrell's cache and Moshfeghi's cache are local storages, functioning as a means for providing the user with the faster access data instead of more slowly accessing the remote site with the same data. The cache taught in Terrell or Moshfeghi does not correspond to the second storage device in the present invention because a read request does not undergo a change to its destination address when the requested data has been found in the cache.

In the claimed invention, when the second storage device does not have the second data, the switch transmits the first read request to the first storage device via the network, with the request unchanged. In Terrell, on the contrary, when the requested data has not been found in the cache, the read request would undergo a virtual-to-real translation to deliver the request to a remote storage via the network.

Clearly, the claimed invention presents an approach completely contrary to Terrell et al. in view of Moshfeghi et al., and is far from being anticipated or obvious in view of Terrell et al. and Moshfeghi et al. under 35 U.S.C. § 102(e) or § 103(a).

For at least the foregoing reasons, claim 13 and claims 14-20 depending therefrom are novel and patentable.

Claims 21 and 22

Applicants respectfully submit that new independent claim 21 is novel and patentable over Terrell et al. and Moshfeghi et al. because, for instance, they do not teach or suggest that when the port unit receives a first read request for the first data from the computer via the network, if the second storage device has second data that is copy data of the first data, the converter converts the first read request into a second read request for the second data, and the switch unit transmits the read request to the second storage device through the port unit, whereas if the second storage device does not have the second data, the switch unit transmits the first read request to the first storage device through the port unit without being converted by the converter; wherein when receiving the data, the switch unit transfers the received data to the computer as the first data from the first storage device.

As discussed above, Terrell's managing processor executes a cache agent process (Fig. 4). Terrell's cache is contained in the router (see Fig. 4); it is **not** equivalent to the second storage device in the claimed invention because no communication through a network for its own is caused by accessing the cache. Terrell et al. does **not** convert the read request into another when a router has found a copy of the requested data in its local storage. Terrell's mirror function is applied only to the cache (see paragraph [0119] (last 7 lines) and Fig. 4), suggesting **nothing** beyond the cache. Terrell et al. does **not** disclose a switch where the switch beforehand transfers data stored in the first storage device to the second storage device, as the Examiner has mentioned. Moshfeghi et al. discloses a system which prefetches information to hold it in a cache in anticipation of the user's request for reducing actual response time. The cache taught in Terrell or Moshfeghi does not correspond to the second storage device in the present invention because a read request does not undergo a change to its destination address when the requested data has been found in the cache.

For at least the foregoing reasons, claim 21 and claim 22 depending therefrom are novel and patentable.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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